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Trephining in a Case of Inter-meningeal Hæmatoma, with Hemiplegia. Recovery.

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TREPHINING IN A CASE OF INTER-MENINGEAL HÆMATOMA, WITH HEMIPLEGIA. RECOVERY.

In presenting to this Section the history of a single case, it is hoped that the interest attached to the subject of cerebral localization from a surgical standpoint, as well as the comparative rarity of recorded operations for the conditions herein reported, will prove to be sufficient excuse for soliciting your indulgence.

Case.—George Jones, negro, aged 53 years, a native of Virginia, shoemaker by occupation, on February 27, 1887, was struck on the left forehead by a brick, the edge of the missile producing an irregular, lacerated wound, about one-half an inch above the external edge of the eyebrow. He was unconscious for a short time; cold water dressings were applied to staunch the hæmorrhage from the wound, and he was put to bed.

I was called to see the patient on the morning of February 28, and found his general condition good, but the wound unpromising on account of being filled with dirt particles acquired from the brick. Probing detected no denudation of, or other injury to, the skull. The wound was cleansed as much as possible, and dressed antiseptically. There was no subsequent malaise, though slight annoyance from roaring in the left side of the head; he walked half a mile to my office, when subsequent dressings were required; and the wound having healed by granulation, he was discharged, recovered, on March 14.

He consulted me again on April 24, stating that

the roaring in the head had continued, and that on April 18, while walking, he suddenly noticed a tendency of the right foot to drag slightly. On the 19th, while eating breakfast, his head fell forward on the table, and his right arm and leg seemed paralyzed; that morning he had a slight chill followed by fever. Since the 19th, the right foot dragged a little more, and he would notice an occasional loss of control of the muscles of the right leg and arm.

At this examination the presence of *arcus senilis* was noticed; the pupils were small, but responded well to light. The right ear heard the watch at six inches; the left at three. The tongue was protruded straight, and the facial muscles were not involved. The heart's action was regular; pulse 90, tense, and arteries rigid. Muscular power of hands (tested by my own, no dynamometer at hand) the same. Either from dulness of the patient, or the existence of slight anæsthesia, no satisfactory results were obtained from the æsthesiometer. In walking he drags the right foot slightly. On April 26, the paralysis of the lower extremity was more marked, and on the 28th the right arm was found to be less powerful than the left. The symptoms, as presented, had evidenced a cortical cerebral lesion, affecting the middle frontal convolution (which lay beneath the site of the original injury) and extending upward and backward gradually involving the ascending frontal convolution. The lesion seemed thus circumscribed because if it involved the inferior frontal convolution there would have been aphasic symptoms present.

In view of the chilly sensations every morning, the septic character of the wound, and the slow but late development of the hemiplegia, it seemed probable that septic matter had been absorbed, and an internal purulent inflammation developed. The condition was carefully explained to him, and an operation advised as a *dernier ressort.* On April 29, Dr. Nalle, of Memphis, was called in consultation, and

he agreed in the necessity for an operation. Dr. J. L. Minor made an ophthalmoscopic examination, and found: "the right eye, optic nerve red, border indistinct, vein large and slightly tortuous—diagnosis, low grade of optic neuritis; left eye, optic nerve red, border indistinct, prominent from œdematous infiltration, veins large and tortuous—diagnosis, optic neuritis."

On May 1, assisted by Drs. J. L. Minor and R. M. Pate, of Memphis, the patient having been bathed, bowels evacuated, scalp shaved, etc., chloroform anæsthesia was produced, and a curved incision made, the convexity towards the eyebrow, and the incision extending upwards on the scalp so that, if necessary, it could be continued to a point over the upper portion of the ascending frontal convolution; if the operation demonstrated no lesion over the middle frontal convolution, and trephining would have to be repeated higher up. Some time was spent in controlling the free hæmorrhage resulting from the incision; the periosteum was eventually reflected, Galt's trephine applied, and the button of bone removed. A small branch of the meningeal artery presented on the dura-mater, and hæmorrhage from it was controlled by applications of hot water.

No intra-cranial fracture of the bone was found. The dura-mater was dark colored, and had no communicated pulsation from the brain. The long needle of a large sized hypodermic syringe, was passed through the dura-mater, and on withdrawing the piston the chamber of the syringe was filled with dark brown blood. Removing the needle similarly colored blood was ejected from the puncture in the dura-mater, and with a bistoury the hole was slightly enlarged, permitting the pulsations of the brain to throw out the fluid in larger quantities, until it was almost evacuated. Four strands of disinfected horsehair were passed through the dural incision in order to secure drainage, boracic acid applied to the

wound, the flaps replaced, a layer of absorbent cotton loosely covered it, and bandage applied. The operation had lasted an hour, and several times hypodermatic injections of brandy were given. The patient seemed to be quite weak at the completion, and he was ordered brandy every half hour. At 7:30 o'clock in the evening he was visited: the dressings were stained with dark blood discharged from the meningeal space. He was feeling perfectly comfortable, his pulse was 72, temperature 98.6° F., and his muscular control of the right arm and leg *had returned.* Morph. sulph. gr. ⅓ at bed time.

May 2. He reported having rested well during the night. No pain in the wound. Pulse 78, temperature 98.4°. Had eaten a light breakfast. He was kept quiet—in bed—for a week; the wound was dressed every third day; and on May 8, he sat up, and was able to walk about the house with undiminished muscular control. No untoward symptom subsequently presented, the man being now as well as ever. A microscopical examination of the blood withdrawn by the syringe showed it to consist of a brown colored serum and colorless red blood corpuscles. It seemed devoid of fibrin ferment, as it did not coagulate.

In regard to finding blood, instead of pus, this corroborated the dictum of Nancrede (International Cyclopædia of Surgery, Vol. V, p. 50): "A differential diagnosis can, under the most favorable circumstances, be only probable, and in most instances impossible."

Pathologically the case is still obscure, and the comprehensive term of inter-meningeal hæmatoma was adopted as most closely covering the condition as evidenced. Agnew (Surgery, Vol. I, p. 287) explains the condition as "a vascular paralysis so modifying the vital properties of the walls of the blood-vessels of the brain, as to favor the free escape of their liquid contents." Considering the non-coagula-

bility of the blood—and had the hæmorrhage been from a ruptured vein or artery, clot would have been present—this explanation is worthy of consideration. Pachymeningitis would have presented somewhat identical symptoms, as in the case of Professor Grainger Stewart referred to below.

The literature of this subject is scanty, though the surgical popularity of trephining from most ancient times is well-known, and it is scarcely improbable that similar cases have presented earlier symptoms of compression and have been successfully operated upon. Indeed, Kurt Sprengel, in the elaborate history of the operation, refers[1] to Meekren (circ. 1519), Binninger (circ. 1673), Jean Murat (1711), Jean Jacques Wepfer (1717), Jean Maurice Hoffman (1719), and Laurant Heister (1758), having trephined for the relief of effusion in cases of injury to the head without fracture of the skull. Nancrede (op. cit.) refers to successful operations by Morand (Opusculi de Chir., Paris, 1768. T. 1, p. 171), Ogle (Brodie, *Med-chir. Trans.*, Vol. XIV, p. 391), and Bruns (Handbuch der prehtisch. Chir. Ab. I, S. 931). Dr. Physick, in the latter part of the last century, in a case of contusion of the head without evident fracture, trephined for the relief of cerebral symptoms, extracted a blood clot, and the patient recovered.

In contemporary literature Jones, (*Lancet*, 1881, II, p. 40), in a male, aged 19, in whom insensibility, convulsions, and paralysis of the right side, followed a fall on the head, trephined over the middle meningeal artery. Death followed. Necropsy showed tear of longitudinal sinus.

N. Weljaminow (*St. Petersburg med. Wochen.*, 1881, VI, p. 455–7) reports a successful case of trephining for intra-cranial hæmorrhage. And Weir

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[1]Histoire de la Médecine, Traduite par Jourdan. Paris, 1815. T. VII, p. 25, et. seq.

(Gross' Surgery, Vol. II, p. 44), trephined for relief of coma and slight hemiplegia, removed a clot between the brain and dura. Death in a few days.

Sylvestrini (*Bull. de l' Acad. de Méd., Paris*, 1883, p. 439), reported a case of kick from a horse over the right temporo-frontal region of a boy aged 15. Two months after the injury, temporary right hemiplegia. Five months later, paralysis of right arm and leg and lower part of right side of the face, complete aphasia, incontinence of urine and fæces, right hemi-epilepsy. He trephined over the centres for the upper and lower extremities, extracted piecemeal a hard organized clot. Patient died on fourth day from purulent meningitis and brain abscess.

Hulke (*Lancet*, 1883, Vol. II, p. 814), in a case of blow over the right temple followed by right hemiplegia and coma, and later spastic rigidity of the left arm, trephined and evacuated inflammatory fluid by dural incision. The cerebral symptoms disappeared and the patient recovered.

Surgeon Major J. Ewart (*Ind. Ann. Med. Sci.*, Calcutta, 1873–4, XVI, p. 165), trephined to relieve symptoms of extravasation of blood in a case of injury to brain caused by a fall from a horse. Partial relief of symptoms; death of patient.

Bryant (*Lancet*, 1884, Vol. II, p. 823), in a case of scalp wound followed by brain symptoms, trephined on the thirteenth day affording temporary relief, but the patient died on the twenty-fourth day after the accident, from meningitis and bronchopneumonia.

Grainger Stewart (*British Med. Jour.*, Vol. 1, 1887, p. 877), in the case of a man who fell, striking the head, slightly wounding the scalp, but suffering no inconvenience for two weeks, when severe headache commenced, and later feebleness of legs and staggering walk succeeded by right hemiplegia, trephined two months after injury over posterior part of third left frontal convolution. Incising the dura-mater a

hæmorrhagic effusion was evacuated. Motor power returned after operation. The patient died on the sixth day of leptomeningitis.

This list is possibly incomplete, including only reports of such cases as were accessible. However, they demonstrate that in cases of injury to the head, without injury to the skull, in which late symptoms of cortical brain complications appear, the locality of the trouble may be ascertained by the rules of cerebral localization, and operative interference will offer hope of improvement if not of complete recovery.